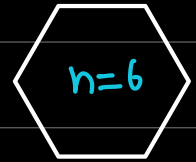
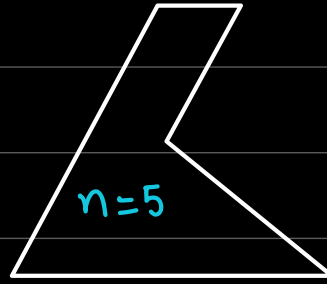
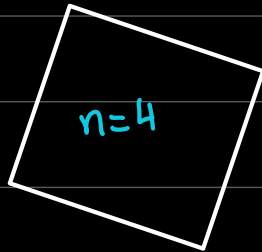
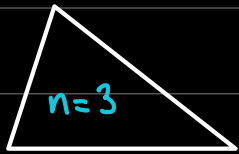


POLYGONS

MANY Angles



no of sides = n

SIDES

SHAPE

$n=3$

Triangle

$n=4$

QUADRILATERAL (ANY 4 SIDED SHAPE)

$n=5$

PENTAGONS

$n=6$

HEXAGON

$n=7$

HEPTAGON

$n=8$

OCTAGONS

$n=9$

NONAGON

$n=10$

DECAGON

REGULAR POLYGON

All sides equal

All angles equal

SIDES

REGULAR

$n=3$

EQUILATERAL TRIANGLE

$n=4$

SQUARE

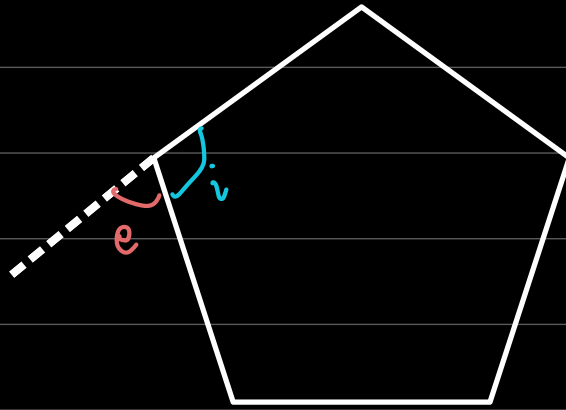
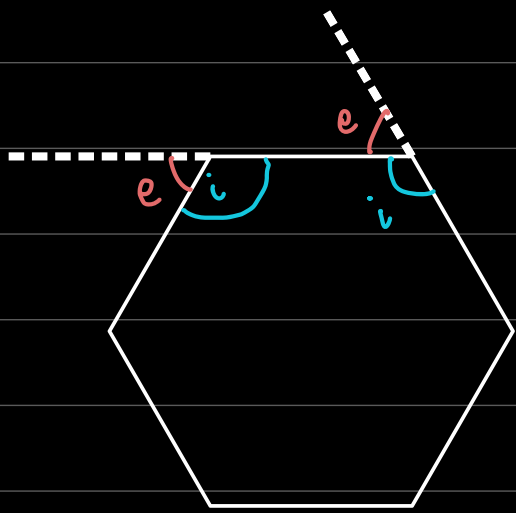
$n=5$

REGULAR PENTAGON

$n=6$

REGULAR HEXAGON.

⋮



i = interior angle
e = exterior angle

$$i + e = 180$$

ON ALL POLYGONS
(REGULAR & IRREGULAR)

Sum of all interior angles = $(n-2) \times 180$

eg: Triangle : $n=3 : (3-2) \times 180 = 180$

Quadrilateral : $n=4 : (4-2) \times 180 = 360$

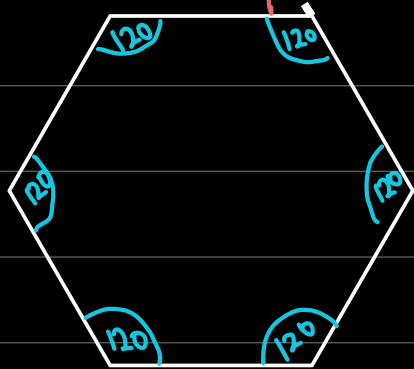
Pentagon : $n=5 : (5-2) \times 180 = 540$

Sum of all exterior angles = 360

ONLY REGULAR POLYGONS

Each Interior angle = $\frac{(n-2) \times 180}{n}$

Each exterior angle = $\frac{360}{n}$



This is a regular Hexagon.

$$n = 6$$

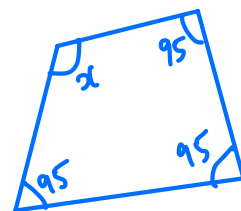
i) Sum of all interior angles: $(n-2) \times 180 = (6-2) \times 180 = 720$

ii) Each interior angle: $\frac{(n-2) \times 180}{n} = \frac{(6-2) \times 180}{6} = 120$

iii) Each exterior angle: $\frac{360}{n} = \frac{360}{6} = 60$

- 3 (a) Three of the angles of a quadrilateral are each 95° .
Find the fourth angle.

- (b) Each interior angle of a regular polygon is 165° .
How many sides has the polygon?



$$95 + 95 + 95 + x = 360$$

$$x = 75$$

Each interior angle = $\frac{(n-2) \times 180}{n}$

$$165 = \frac{(n-2) \times 180}{n}$$

$$165n = 180n - 360$$

$$360 = 180n - 165n$$

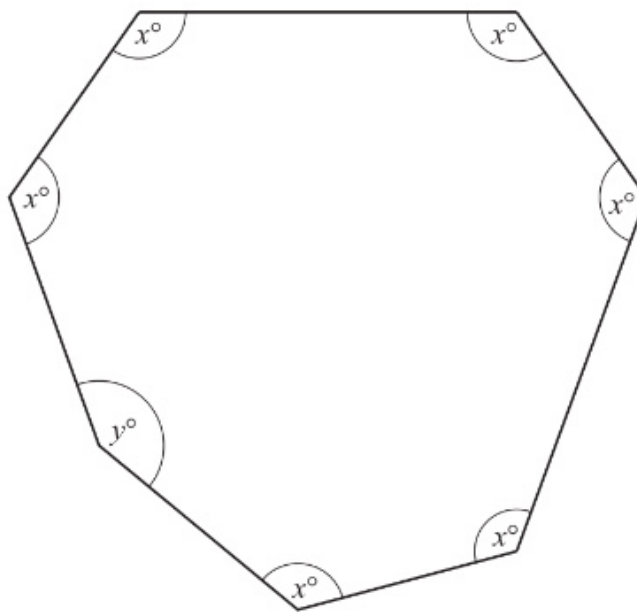
$$360 = 15n$$

$$n = 24$$

Answer (a) 75 [1]

(b) 24 [2]

- 5 The 7 sided polygon in the diagram has 6 angles of x° and one of y° .



- (a) Draw the line of symmetry on the diagram.
- (b) If $y = 126$, calculate the value of x .

[1]

Answer (b) $x =$ [2]

14 A regular polygon has interior angles of 160° .

(a) Calculate the number of sides of the polygon.

Answer [2]